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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,671	02/19/2004	Tapesh Yadav	037768-0114	1995

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EXAMINER	
VIJAYAKUMAR, KALLAMBELLA M	
ART UNIT	**PAPER NUMBER**
1793	

MAIL DATE	DELIVERY MODE
07/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/780,671	YADAV, TAPESH	
	Examiner	Art Unit	
	KALLAMBELLA VIJAYAKUMAR	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *6-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/15/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/15/2008 has been entered.
- Claim-1 was amended. Claims 1-20 are currently pending with the application. Claims 6-20 with drawn from further consideration over the earlier restriction dated 10/11/2006.
- Abstract was amended.
- The examiner has considered the IDS filed 05/15/2008.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 35 USC 103(a) as obvious over Mitchnick et al (US 5,770,216).

Mitchnick et al teach the composition of doped ZnO nanorods with a diameter of less than 100 nm and an aspect ratio of at least two (Cl-2, Ln 27-34). The dopants included Y, Al, Ga, Pt, Bi, lanthanide,

Mo, Ni Co, Sb, and Cr in an amount of 0.01-10 wt% of the resultant particles (Cl-11, Ln 1-8; Cl-13, Ln 17 – Cl-14, Ln 47). The Al-doped ZnO had a resistivity of 100 ohm.cm (Cl-4, Ln 3-5). The ZnO particles were coated with a polymer for dispersion in a polymer matrix (Cl-2, Ln 51-57). All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Mitchnick et al et al be insufficient to anticipate the instant claims, the instant claimed composition would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the structure and it has the same common utility as a conductive filler in a coating composition (Instant Claim-6). The burden is upon the applicant to prove otherwise. In re Fitzgerald, 619 F.2d 67, 205 USPQ594 (CCPA 1980).

2. Claim 3 is rejected under 35 USC 103(a) as obvious over Mitchnick et al (US 5,770,216).

The disclosure on the composition of doped ZnO nanorods by Mitchnick et al as set forth in rejection-1 under 35 U.S.C 102(b)/103(a) is herein incorporated.

The prior art fails to teach the instant claimed conductivity per the claim-3.

However, the prior art teaches doping ZnO with various elements over a range of concentrations and the conductivity for an Al-doped ZnO lies close the instant claimed value of >0.01 mhos.cm. and a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of “having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium” as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

3. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 35 USC 103(a) as obvious over Gray et al (US 5,985,173).

Gray et al teach the composition of nanoparticle phosphors such as ZnS: Al and ZnS:Mn with a particle size of 2-10 nm, wherein nanoparticle phosphor was capped with a shell (Cl-3, Ln 5-10; Cl-5, Ln 34-67; Cl-6, Ln 9-38; Ex-1). With regard to the conductivity in claims 1 and 3, the prior art composition is either same or substantially same as that claimed by the applicants, and they will have same properties (Further See Tomomura et al, US 4,916,496; Cl-2, Ln 54-58; ZnS- resistivity of 1 ohm-cm). All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Gray et al be insufficient to anticipate the instant claims, the instant claimed composition nonetheless would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the structure and a method of making it. The burden is upon the applicant to prove otherwise. In re Fitzgerald, 619 F.2d 67, 205 USPQ594 (CCPA 1980).

4. Claims 1-5 are rejected under 35 USC 103(a) as obvious over Fujishiro et al (Quantum confined Semiconductor nanostructures, MRS Symposium 737, Dec 2-5, 2002, Boston, MA).

Fujishiro et al teach the composition of tube shaped Al(3+)-doped ZnO ceramics with a particle size of 100 nm in diameter and 500 nm in length, and having a DC conductivity of 0.1 Scm^{-1} at 50C that increases with the temperature (Pg-360, Fig-3A and its description; Pg-361, Fig-6; Pg-362, conclusion). The tubular Al-ZnO was prepared by the hydrolysis of component salts in presence of a surfactant (Pg-364, Cl-2, Ln 1-30) and the adsorption of a layer of surfactant over the oxide surface would be obvious over the interaction between the surfactant and the oxide surface (See Gray et al; US 5,985,173; Cl-6, Ln 9-38).

The prior art fails to teach the instant claimed particle size.

However, the prior art particle size of 100 nm lies close the instant claimed range with a d_{99} of less than 100 nm, and a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed.

Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as obvious over Lieber et al (US 5,897,945).

Lieber et al teach the composition of acicular nanorods with the formula MlxM2yOz, wherein the preferred binary oxides include Al203 and ZnO. The prior art further teaches doped ZnO nanorods with the formula In:ZnO. The nanorods had a diameter of 1-200 nm and a length of 0.01-300 microns (Cl-2, Ln 43-51; Cl-3, Ln 27-53; Claims 7-10). In3+ and Al3+ as dopants meet the limitation of element having higher oxidation state than Zn (2+) in the claims. The prior art further teaches that the nanorods may be encapsulated in a matrix forming the composite (Cl-3, Ln 28-42).

The prior art fails to provide a working example containing the encapsulating matrix.

The instant claimed composition would have been obvious to a person of ordinary skilled in the art over the disclosure by Lieber et al, because the reference teaches each of the claimed ingredients within the structure and a method of making it and prima facie obvious over instant claims. With regard to the conductivity in claims 1 and 3, the prior art composition is similar to that claimed by the applicants, and similar compositions are expected to possess similar properties.

6. Claims 1-5 are rejected under 35 U.S.C. 103(a) as obvious over Mitchnick et al (US 5,441,726).

Mitchnick et al teach the composition of doped ZnO nanorods with a diameter of 10-150 nm and 30-500 nm in length (Cl-4, Ln 67 – Cl-5, Ln 5). The dopants included Y, Al, Ga, Pt, Bi, lanthanide, Mo, Ni Co, Sb, and Cr in an amount of 0.01-10 wt% of the resultant particles, and further teaches a specific example of Al-doped ZnO (Cl-7, Ln 27-39; Cl-10, Ln 43-49; Fig-5). With regard to the conductivity in claims, the prior art doped ZnO is similar to the instant claimed compositions, and similar compositions are expected to possess similar properties. The prior art further teaches surface treating ZnO particles with silicone compounds to increase compatibility with oil-based compositions (Cl-11, Ln 17-21).

The prior art fails to teach the instant claimed particle size of less than 100 nm per the claim-1.

However, the instant claimed particle size with d_{99} of less than 100 nm lies inside the prior art range of 10-150 nm, and prima facie obvious over instant claims because, In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 6, 11 and 16, 18 and 23, 25 and 30, 32 and 37, 39 and 44 of U.S. Patent No. 6,830,822. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are drawn to similar compositions wherein the patent is silent about the conductivity of the pigment that would be obvious because similar compositions are expected to possess similar properties. The difference in transparency property in the patent composition over the nanoparticles with a diameter of 50 nm or less as compared with micron sized particles with a diameter of 1 micron or greater would be obvious over the differences in their respective absorption and transmission characteristics.

Response to Arguments

Applicants arguments filed 05/09/2008 have been fully considered and the amendment to the specification overcomes the objection to the specification/abstract. Applicants amendment overcomes the prior art by Seeber et al (Mat. Sci. in Semicond. Processing, 1999 (2), 45-55); Takakura et al (Abstract, MRS Symposium, Fall 2000); and Min Yan (Thesis, Northwestern University, Dec 2002).

With regards to Lieber et al, it clearly teaches encapsulating nanorods in a matrix material of nanorods to form a composite that reads on the instant claimed nanomaterial composition of matter comprising Zinc is coated and wherein the nanomaterial composition of matter comprising zinc has a particle size distribution of d99 less than 100 nm, because composition is not limited to coated Zn particles (Res, Pg-7, Section-a).

With regard to Fujishiro et al, the surface of the particle will obviously encapsulated with the surfactant in the preparation media, and it has been addressed in detail in the rejection above (Res, Pg-9; Section-d).

For the reasons set forth above, applicants fail to patentably distinguish their composition over the prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/
July 18, 2008.

/Stanley Silverman/
Supervisory Patent Examiner, Art Unit 1793